File

Toronto Office

The Province of Alberta

IN THE MATTER OF "THE NATURAL GAS UTILITIES ACT"

—and—

IN THE MATTER OF an Enquiry into Scheme to be adopted for Gathering, Processing and Transmission of Natural Gas in Turner Valley

---

G. M. BLACKSTOCK, Esq., K.C., *Chairman*

Dr. E. H. BOOMER, F.C.I.C., *Commissioner*

Session:

CALGARY, Alberta April 16th, 1946

VOLUME 77

I N D E X

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MEMORANDUM TO CORRECTIONS OF TRANSCRIPT

VOLUMES 73 and 74

EVIDENCE OF EARL C. SMITH

PAGE	LINE	ERRATA
5947	28 (last)	"additions" should read "differences"
5951	14	"7.1630%" should read "71.630%"
5959	25	"8 billion" should read "18 billion"
6056	21	"objects" should read "objections"

.....

VOLUME 77
9.30 A.M. Session.

Tuesday,
April 16, 1946.

THE CHAIRMAN: Now, Gentlemen, as I indicated to you in a recent letter I desire to know this morning what evidence you still have to bring so that we can arrange the agenda for this week and next.

I had intended if need be, to sit mornings and afternoons but on account of the Barrs' trial which is still going on, and they are holding night sessions, I cannot ask the Court Reporters to sit mornings and afternoons this week. We can do so next week if need be.

Now you are ready, Mr. Mahaffy, at any time, with your submission?

MR. MAHAFFY: Yes, Mr. Chairman.

THE CHAIRMAN: How long do you think that will take?

MR. MAHAFFY: Mr. Chairman, you will perhaps observe the written submission is very brief. So far as we are concerned I intend to put a representative of my client in the box who will read those submissions and that is all so far as we are concerned, so it depends entirely upon what

the cross-examination will be.

THE CHAIRMAN: Yes.

Mr. McDonald, you spoke to me about the witness that you wanted to give evidence this morning?

MR. McDONALD: Yes. An engineer by the name of Brown is going to deal with that patent. He is not here. He may possibly have understood the hour was at 10 o'clock.

THE CHAIRMAN: He is going to give evidence?

MR. McDONALD: Yes, but he is not here.

THE CHAIRMAN: Have you any idea how long his evidence will take?

MR. McDONALD: I do not imagine it will take more than an hour or two. An hour, I would think, would be about right.

THE CHAIRMAN: Have you anything further, Mr. Harvie?

MR. HARVIE: No, other than just one or two things that we have. For instance, Exhibits 162 and 164 were filed and we have not yet distributed copies of those exhibits and we would like, with your permission, to distribute them now.

THE CHAIRMAN: And that will take how long?

MR. HARVIE: No time at all.

THE CHAIRMAN: Oh, I thought you had some evidence.

MR. HARVIE: No, it is just a matter of distributing these and there will be one or two other items that can be or should be cleaned up in half an hour. It is in connection with the Order, and we are working on that and I am told that we will soon have something concrete on that.

THE CHAIRMAN: Mr. Fenerty?

MR. FENERTY: We have no further evidence.

THE CHAIRMAN: Mr. Steer?

MR. STEER: There are two matters on which the Canadian Western Company will make a submission, Mr. Chairman;

one is the arrangement under which they will, the Company will acquire the gas which is being stored in the Bow Island field and the other is the question of free gas which is being supplied to the town of Bow Island. Now it may be that the Board will require notice of that latter question to be sent to the town of Bow Island as they are interested.

THE CHAIRMAN: I was under the impression that that free gas to the town of Bow Island was taken into consideration at the time when the arrangement was made.

MR. STEER: We will cover that, and our submission will be that the free gas for the town of Bow Island was the consideration paid for a site in Bow Island for the repressuring plant and that being so the free gas to the town of Bow Island, unless some other arrangement will be made, is a matter which must be considered in considering the whole question of repressuring but we will have a written submission, subject to confirmation by my learned friend, Mr. Chambers, as to the form of contract, with regard to the Canadian Western Company taking over the Bow Island repressured gas. We will have a submission with respect to that by the time of the adjournment this week and can submit it next week, and at the same time I think in that submission, subject to your approval, we should mention the matter of free gas to the town of Bow Island because they seem to be inseparably connected.

THE CHAIRMAN: And that will not be until next week.

MR. STEER: I would think not, sir.

THE CHAIRMAN: Mr. Chambers?

MR. CHAMBERS: I have no further evidence, Sir, except there is a matter that I would like to have cleared up and I do not know whether it is necessary to call a witness or

not but I would like to refer to it now.

In Volume 71, during the course of the evidence of Mr. Stanley Davies at page 5835, Mr. Davies says:

> "Wet gas, and I think you will find, Sir, in the record of the Hearing before the Board, the Public Utility Board, or the Board of Public Utility Commissioners, that evidence was given where as high as 70 barrels a day of liquid was being taken out of the Gas Company drips in the year 1931."

And then he adverts to it again at page 5850, and there I asked Mr. Davies the question and I say:

> "There is one question I would like to ask Mr. Davies. You said, as I understand it, that from 70 to 80 barrels per day of gasoline was taken out of the gas lines by the Gas Company prior to the installation of the absorption plant, is that right?
>
> A. When I said gasoline it might be fluid. Better include water in that. It is Mr. Slipper's evidence in the Hearing of 1931."

Now I have had my agent in Edmonton go through the transcript of the evidence of the 1931 Hearing, Mr. Slipper's evidence, and they have reported to me that they cannot find anything of that nature in Mr. Slipper's evidence. Now it is a matter that ought to be cleared up one way or the other. I do not know of any other way that I can do that except perhaps by bringing the secretary of the Board of Public Utility Commissioners here.

THE CHAIRMAN: Why not call Mr. Slipper?

MR. CHAMBERS: Well I doubt very much whether Mr. Slipper would remember everything he said in 1931. I think the

record should be produced, and perhaps if the record, if we could have the record sent down probably.

MR. FENERTY: I can have Mr. Davies check it and see what he had in mind.

MR. CHAMBERS: I am not bringing it up now just for the sake of discrediting Mr. Davies. I just wanted to get the actual facts, if Mr. Slipper said anything of that kind.

MR. FENERTY: I think perhaps I might get a hold of Mr. Davies and have him check it and consider his idea and what he did have in mind and tell you.

MR. CHAMBERS: I just wondered how to get it done.

THE CHAIRMAN: I can have the records sent down if you wish.

MR. CHAMBERS: Subject to what Mr. Blackstock says, Mr. Fenerty, he said he would have the records sent down . . . .

MR. McDONALD: I think the City of Calgary has a complete record at the City Hall.

MR. FENERTY: Yes, they have.

MR. McDONALD: I have read parts of it there.

MR. FENERTY: I will have him check it and see about it.

THE CHAIRMAN: Then have you any further evidence, Mr. McDonald, on the question of the Absorption Plant distribution?

MR. McDONALD: We will be, within the next day or two, dealing with the Gas & Oil Products' submission. . . . . .

THE CHAIRMAN: I thought probably we could finish with that today.

MR. McDONALD: Then within the next couple of days I can report on the others to the Board.

THE CHAIRMAN: The next couple of days, Mr. McDonald, what are we going to do tomorrow?

MR. McDonald At the present time I had no intention

of calling evidence.

THE CHAIRMAN: You want time to go over it and see what it is?

MR. McDONALD: Yes. We just have the three submissions now. In connection with the pooling agreement, I think we are going to arrive at a form of an Order which will be suitable to all parties. It is now in the course of negotiation.

THE CHAIRMAN: Yes, I saw a draft of it but I have not had time to consider it very carefully.

Then what about the cross-examination of Mr. Mercer, that is still unfinished. What about the cross-examination of Mr. Mercer, Mr. Fenerty?

MR. FENERTY: Oh, on this question of documents. I have not had the time to discuss it with my friend, Mr. Steer. I have given some thought to that in discussing it with Mr. Davies and with Mr. Morrison and there is just a possibility that we may feel that we can get by with what we have now. We are very anxious not to prolong this hearing but I would like to discuss it with Mr. Steer.

THE CHAIRMAN: Well, Gentlemen, I was quite serious when I wrote you, that I wanted this Hearing finished by the 25th, unless something that no one could foresee would come up. If that happened of course I would hear any further evidence which was offered but I presently intend that the Hearing is going to be over on the 25th.

MR. FENERTY: Yes.

THE CHAIRMAN: So that if any of you want to cross-examine Mr. Mercer, you had better try and do it this week.

MR. FENERTY: I would like my friend, Mr. Chambers, to be a little more helpful if he could in the way that this thing was left in the air the last time we were discussing it,

and there was a suggestion that there were no separate reports and quite frankly I do not understand it.

THE CHAIRMAN: Well the arrangement was that Mr. Mercer would appear for cross-examination at the time we were dealing with the Absorption Plant contract.

MR. FENERTY: Yes.

THE CHAIRMAN: And I made the only Order that I could make and that is that he should appear and bring his books and documents with him.

MR. FENERTY: Yes.

THE CHAIRMAN: And then he would be your witness for cross-examination.

MR. FENERTY: Yes, but some of the things that he was going to produce were certain Reports which had been referred to by Mr. Kirkpatrick and others and quite frankly I had thought that possibly if they could be produced without Mr. Mercer going on the stand and that they could be put in front of us, we could see whether we wanted to do anything with them but if my friend does not react to that suggestion, I cannot say very much more about it.

THE CHAIRMAN: There has been very wonderful co-operation between counsel, the parties and witnesses and I suppose Mr. Chambers got to the stage where his instructions perhaps took away from him that freedom of action that he has been giving counsel so willingly in the past.

MR. CHAMBERS: No, sir. I would like to say most emphatically that I had no instructions which would tend to tie my hands in any way whatsoever. I have been acting heretofore on my own responsibility and I would like to say this and I say it with all sincerity that my instructions are, and information is, that we have produced all the documents which

we think are relevant and I am sincere in that and I have talked to my people again about it and if there was anything of the nature that you have in mind, I certainly would have Mr. Mercer bring it here.

THE CHAIRMAN: We will say "your implied instructions".

MR. CHAMBERS: No, I say that my instructions are, - I should say probably my information from my clients is that we have produced all the documents which are relevant.

MR. FENERTY: Well subject, as I say, I want to consult the people associated with me but we will not go beyond asking Mr. Mercer to produce those documents, we will do that rather than to attempt to go through the books and in view of my learned friend's statement it would not appear that we would secure anything more than we would do in this way, but as I say, I would like to consult with Mr. Steer finally on that.

THE CHAIRMAN: Is your witness here then, Mr. McDonald?

MR. McDONALD: No, he is not.

THE CHAIRMAN: Can you start, Mr. Mahaffy?

MR. CHAMBERS: There is the matter of the submission from the Nitrogen Plant.

THE CHAIRMAN: That will be made on the 24th.

MR. CHAMBERS: That will be a week from tomorrow?

THE CHAIRMAN: A week from tomorrow.

MR. MAHAFFY: Mr. Chairman, I might proceed but I did not bring the witness here this morning. The understanding I had was that this morning was taken up, so to speak. I can proceed at whatever time you wish but I have not got him here just now.

THE CHAIRMAN; I think I would like to start with him today, Mr. Mahaffy.

MR. MAHAFFY: Very well, sir, I will have him here.

THE CHAIRMAN: We are in this position then, that Mr. McDonald's witness is not here and yours is not here?

MR. MAHAFFY: If I have him here say in half an hour?

THE CHAIRMAN: You had better see what Mr. McDonald is going to do and you can arrange it between you.

MR. McDONALD: I am sorry, sir, Mr. Plotkins instructed Mr. Brown to be here at 10 o'clock. He will be here shortly.

THE CHAIRMAN: Then we will adjourn until 10 o'clock.

(A short adjournment was here taken accordingly.)

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(Go to page 6199)

MR. FENERTY: If the Chairman pleases. I got in touch with Mr. Davies about the matter referred to at the opening by Mr. Chambers, and Mr. Chambers has asked me to make a statement to the Board so that the matter will be of record. Mr. Davies was under the impression that the matter had been referred to in the evidence of Mr. Slipper, but after this lapse of time he is not prepared to say it is so. But, it was a matter that was discussed with various people during the Hearing and it was a matter of common knowledge and he had the impression it was given in evidence, but it may have been just in discussion.

MR. CHAMBERS: There is one matter I would like to bring to the Board's attention for a moment. It is in connection with the Nitrogen Plant contract and the only reason I bring it up is that Madison is now a utility and might be under some criticism if it does not take a particular line of action. But in that contract, Clause 9, it was provided that agreement would terminate with the termination of the war and my own view is that the war terminated within the meaning of that clause on the 1st of January 1945 by virtue of Section 5 of the National Transitional Powers Act of 1945, being Chapter 25 of the Statutes of Canada 1945. Now assuming that is so, the Madison Company might be taken to acquiesce in or being a party to supplying gas at seven cents or a price lower than it should. I am bringing it to the Board's attention and I am not suggesting anything should be done at this stage unless someone thinks we should. I have in mind the decision of the Board which we hope will be out in the next few months.

THE CHAIRMAN: I was under the impression that contract had been terminated by the Gas Company.

ROBERT CLYDE BROWN,
Dir. Exm. by Mr. McDonald.

MR. STEER: It was terminated and after a prolonged discussion it was carried on on a day to day basis on the old terms. What strikes me about it is that the situation resembles that with regard to the Imperial Oil Refinery and when representatives of the Nitrogen Company are here next week possibly the same kind of discussions might result in an agreement subject of course to the approval of the Board of Public Utility Commissioners as to the rate. I think nobody suggests we ought to cut off the supply to the Nitrogen Plant at the moment.

MR. CHAMBERS: Oh no, I am not suggesting that.

ROBERT CLYDE BROWN, having been duly sworn, Examined by Mr. McDonald, testified:

Q Mr. Brown, you are a graduate of what University ?

A Alberta.

Q And when did you graduate ?

A 1942.

Q Where have you been employed since that time ?

A First at the Nitrogen Plant. Second - do you mean the periods ?

Q For how long ?

A I was at the Nitrogen Plant from May 1st, 1942 until January 15th, 1943. I was with Shawinigan Chemicals from January 24th, 1943 until the end of March. I had to leave in a hurry to come west. I began with Royalite on April 2nd, 1943 and left their employ on September 15th, 1945.

Q And what is the nature of your duties with the Nitrogen Plant ?

A With the Nitrogen Plant I was Shift Analyst supervising the plant control testing.

Q And with the Shawinigan Company ?

A I was employed there to start with as Plant Research Chemist.

Q And with the Royalite Company ?

A With the Royalite I was Laboratory Assistant in their Turner Valley laboratory, also doing plant control testing.

Q Were you employed with the Conservation Board ?

A I was with the Conservation Board from September 15th, 1945 until March 15th, 1946.

Q Are you presently employed ?

A I am not presently employed.

Q Now you have investigated the process under which Mr. Gower of Regina has the patent ?

A Yes.

Q Concerning the dealing with gas produced in Turner Valley ?

A Yes.

Q Now did you travel to Regina and interview Mr. Gower ?

A Yes, when it was found he was not able to be here I was commissioned by the Lion Oil Company to go down there and investigate his processes which I did.

Q MR. CHAMBERS: Is it a patent ?

MR. McDONALD: Yes.

A He has a caveat filed on this process with the Canadian Patent Office.

MR. STEER: Do I understand Mr. Gower is not going to be here ?

A Mr. Gower - it is impossible for him to be here on account of a meeting with some officials from Ottawa which is starting today in Regina.

MR. CHAMBERS: Is that meeting for a week ?

A I never asked him about the length of it but he certainly wished he could have been here.

Q MR. McDONALD: Do you know what Mr. Gower's position is. What does he do ?

A He is Director for Research for the Government of Saskatchewan. He is also an Analytical Chemist and Consulting Engineer.

Q And you were sent down to Regina to look into this matter for the Lion Oils ?

A That is right.

Q Who are sponsoring the investment that is going to be made in the use of this process ?

A That is right.

Q What have you to report as to the type of process it is and with reference to the amount of gas to be used and the details in regard to it ?

A I would like to state these points briefly. The experiments on which he bases his process or projected process was carried on in Turner Valley. The work originally began in 1940 to 1943. In July and August of 1943 his "lab." was set up in Turner Valley and these are the points or conclusions I have come to from investigating his process. This process will recover approximately one gallon per thousand feet of stabilized blend high octane gasoline of about 120 octane rating. There is no waste of anything above methane which goes out in the tail gas. The tail gas can be delivered at 150 pounds if required sweet and dry. 150 pounds pressure of his polymerization unit. This cracking and polymerization is just one stage of the complete process and produces sweet dry gas ready for synthesizing in the common stage. Mr. Gower is withholding nothing from the public and made over everything present, all details of his process to me to put on record. As to the quantity of gas used he has said that the minimum required to

operate his pilot plant which he is wanting to do, is one million and a half to two millions a day. As for a plant of commercial size he would take any amount that he could get and probably a minimum of five million a day.

THE CHAIRMAN: Now five million cubic feet ?

A Five million cubic feet per day. I will give you some details of his process.

Q Can you give them, all of them ?

A I can give you the calculations if you wish to take them down also. Everything is here.

Q The point is Mr. Brown, that Mr. Plotkins has asked the Board to permit him to withdraw from the gas going to Calgary the gas which he produces in the Lion Oil wells, three I think in number ?

A That is right.

Q And in order that that may be done the Board must have the fullest possible information in order that it can be submitted to experts.

A Yes, I understand that and I think I have everything here. I think he has given everything which the Board will require including the data on these experiments he ran in Turner Valley in 1943.

Q Well give us everything you have.

A I will read his paper.

Q Is the light bad there ?

A No, this is fine. The report on the details of Turner Valley separator gas, Page 92 of his notes taken the seventh month 1943. Findings herein reported were undertaken for the Lion Oil Company of Calgary, Alberta, by C. Gower and R. Jenkins of the Scientific Equipment Laboratory in Regina, Saskatchewan. The

object of the investigation was to gain some knowledge as to the practicability of producing high octane fuels and possible chemical intermediates from Turner Valley separator gas by catalytic cracking for the production of olefins from which the above commodities may be synthesized. A brief description of the apparatus and analytical technique employed may be given here to facilitate a clear understanding of both objective and results obtained,where the apparatus consisted of an electrically heated cracking furnace fitted with catalyst chambers to accommodate two catalysts which were investigated separately for comparative data. The raw gas was introduced from the line into the catalyst chamber of the furnace at various pressures from one-half to one and three-quarters mercury,space velocities of from five to twenty seconds and temperatures from 1193 to 1600 degrees fahrenheit. From the catalyst chamber the gas was passed on through a cooler tower liquification chamber and scrubber to remove any sulphur compounds present. Then to a gas compressor where the pressure was raised approximately 175 pounds p.s.i. The compounds are then introduced into a polymerization catalyst chamber from which point the gasses were passed on through a stabilizer to vent. Olefins determinationsby bromine sodium hydroxide method were made ahead and behind the polymerization unit in order to determine the total olefins produced at various operating conditions.

(Go to Page 6205)

An analysis of the gas behind the poly stage was made to determine the possible yield of poly gasoline per thousand cubic feet of gas throughput by the difference in olefin content before and after polymerization in a single stage unit which may be projected to represent field operations. This method was decided on rather than attempting to measure volumetrically polymerization products produced in view of the fact that great error could be introduced by the latter method due to slight leaks in apparatus on small scale operations. Whereas, in the former case the gas percentage of poly produced could be determined to a higher degree of accuracy. The following is the complete record of tests made and results obtained by runs. Now, he has a set of figures here, the data readings taken and computed. Shall I read these out?

THE CHAIRMAN: I think you had better.

A Primary catalytic cracking of separator gas from Lion Sunray wells No. 1 and No. 2. This is the experiment. Primary experments with Turner Valley natural gas for the production of olefins by catalytic cracking in the presence of chromic salt gives the following results. It gave the following results under the conditions set out below. The gas charge pressure equals one-half inch of mercury. Now, I do not know how you would like me to give these.

Q You have them tabulated there, have you?

MR. McDONALD: They could be typed in.

Q THE CHAIRMAN: You can read them, Mr. Brown, and then let the reporter have them to copy into the record.

A All right, that will be fine, and here are the figures:

Robert C. Brown,
Dir. Exam. by Mr. McDonald. - 6206 -

Test #	Temp. °F.	Space Velocity	% Olefins	Possible Poly Yield 1000 cu.ft.
1	1330	10 seconds	4.5%	.405 gal.
2	1345	20 "	6.2%	.560 "
3	1400	10 "	8.0%	.720 "
4	1459	10 "	8.5%	.760 "
5	1516	5 "	9.5%	.860 "
6	1540	5 "	11.0%	.990 "
7	1600	5 "	10.2%	.92 "

He has worked out the conversion.

Conversion:

Possible conversion from analysis = 12.3

Actual conversion by cracking = 11.0

1.3

Those figures are in gallons per thousand cubic feet, and the percent conversion of possible conversion is 89.5% at 1540° F.

Q MR. McDONALD: 89.5 gallons or cubic feet?

A Under percent conversion of possible coversion of the 89.5% at 1540° F. That was in the first test of cracking of separator gas. He made a second test using catalytic cracking of the gas in the presence of a nickel salt under the conditions set out below giving the following results: He has ten tests here and I shall read them if you wish.

Q Yes?

A He is using a nickel salt.

Robert C. Brown,
Dir.Exam.by Mr. McDonald.

- 6207 -

Test #	Temp. °F.	Chg. Press	Space Velocity	% Olefins	Possible Poly Yield/1000 cu.ft.
1	1193	½" Hg.	10 seconds	1.2	.108 gal.
2	1250	"	"	3.6	.33 "
3	1360	"	"	6.8	.61 "
4	1402	"	"	8.8	.79 "
5	1467	"	"	10.0	.90 "
6	1475	"	20 "	9.5	.85 "
7	1487	"	" "	9.8	.88 "
8	1487	"	10 "	10.2	.92 "
9	1500	1¾ " Hg.	" "	10.5	.95 "
10	1500	"	5 "	10.4	.936 "

Conclusion:

From the above results obtained by the use of Chromium and nickel salts as catalysts for the cracking of Turner Valley Separator gas, the nickel salt seems to give a higher olefin yield at lower operating temperatures which is an advantage in plant operation on a commercial basis.

The above olefin yield is well within the practical production range for the manufacture of either poly gasoline.....

Q Just a little louder.

A The above olefin yield is well within the practical production range for the manufacture of either poly gasoline, alcohols or chemical intermediates such as di, or mono-halogenated hydrocarbons. It will be seen from the above that the conversion of gases heavier than methane in test (9) to the olefin series was almost complete.

The conversion in the record test is:

Possible conversion from analysis		12.3
Actual conversion by cracking		10.5
% of possible	= 85.5% at	1500°F.

Now then, the polymerization run. Remember that the gases from the cracking unit pass through a scrubber to take out any remaining sulphides and then on through a compressor with a pressure stepped up to 175 lbs., from which the gases go into the polymerization unit.

Now this is the polymerization run: He has five tests here and at one hour intervals:

Time	Temp. °F.	Pressure #p.s.i.	% Olefin before poly	% Olefin after Poly	Reacted Olefin % on possible
11 a.m.	750	167	10.0	5.6	44%
1 p.m.	730	172	10.0	6.4	36%
2 "	740	170	10.0	7.4	26%
3 "	730	168	10.0	7.8	22%
4 "	740	168	10.0	6.3	37%

And then he has a note regarding Poly Yields from the tests.

Note re Poly yields from Test :

In a single stage poly unit it has been found by experimental operation over long periods that approximately 30 to 35% of the available olefin can be polymerized wthin the gasoline range thus necessitating three stages in field operation However, for test purposes, it has been found that a single stage unit projected to three stage operation is just as accurate as three stage operation and less expensive to construct. The losses are easier to control as well, which is quite important in small unit operation.

Calculating the yield of liquid on the above basis we may expect the following:

Olefin content of gas	10%
Total possible yield in 10 hours	50 cc. approximately,
or per hour	5 cc.

Since our recovery from (1) stage is 1/3 of above, we have in 10 hrs. 50 divided by 3 which is equal to 16.7 cubic centimetres, and in 1 hour, 1.67 cubic centimetres.

This volume being rather small to release at high pressure and measure accurately, it will be better to calculate the yield per hour from the gas analysis behind and ahead of the poly stage, thus assuring accurate results.

(Go to page 6210)

Summarizing:

The results obtained in the above run are very promising and based on a 10% olefin content represent .9 gallons of poly gasoline per one thousand cubic feet of raw gas and it is safe to assume that in plant operation at least one gallon per thousand cubic feet can be obtained at one point, rather can be obtained as at one point 11% olefins were produced which represents .995 gallons per thousand cubic feet.

From these findings it is certain that separator gas can be processed on a commercial basis to produce high octane fuel in the form of poly gasoline or alcohols.

Now that test was dated June 2nd, 1943 or at least this data was assembled by C. Gower.

Now that is the data he has on that test in Turner Valley. He also ran original tests out there but not particularly pertaining to the polymerization itself and he obtained, a short way back he gave, made a statement that the possible conversion is 12.3% of, or rather, - he made the statement that the possible conversion from analyses is 12.3%.

Well the way he gets that is from a gas analysis made by, - it does not say by whom it is made, - it is an analyses of natural gas supplied by the Lion Oil Company, Calgary, and there is one from the Imperial Plant No. 1, the Imperial Plant No. 2 and the B.A. and I presume he took the average of the fractions and the percentage of the fractions above methane, in each of these three analyses to arrive at that figure.

Now he found from his tests that the active operating conditions, that is cracking and polymerization, were the temperature pressure 1493 degrees fahrenheit and the space velocity of 10 seconds for cracking, and 150 pounds at 650 degrees fahrenheit for the polymerization. Those were the

actual operating conditions which he found during the test.

There has been a question raised as to suitable metals with which to construct a cracking furnace which operates at 1500 degrees Fahrenheit but they have special steel which will operate at that temperature quite well.

That is about all he has on record as to the tests of cracking and polymerization made in Turner Valley. He also stated that, should he put in another pilot plant to make this run again it would be practically duplication of this experiment with the exception that the equipment would have to be designed larger, according to the capacity of the projected plant.

Now I asked him, or I notice in the Report of the last Hearing on this subject, dated March 15, 1946, Volume 73, some questions were asked which I thought you might wish to have answered.

There was one question, "Can gas be delivered from the polymerization unit at 150 pounds per square inch?". Yes, that is 150 pounds per square inch is the pressure of the polymerization unit and Mr. Gower says that gas can be delivered at that pressure. That means that gas can be gathered at low pressures, let us say the line pressure of 35 pounds and during this process it can be, by the use of one compressor, stepped up to a pressure of 150 pounds per square inch and there is no reason why it cannot be gathered at that pressure and conserve that low pressure gas which is now going to waste and being flared and that might not be high enough line pressure for gathering line pressures but at least it would be 150 pounds pressure that would have to be raised some other way.

Here is another question: "Can the process be used with

natural gas from any field, that is high methane or low methane gas?" Well no, the answer is it can be used with wet gas, at least this part of the process can be used with wet gas but this, which I have just stated, this process which I have just stated is only one part of this complete process and this complete process would utilize all the gas, the tail gas as well as the part which he proposes cracking and polymerizing here but for this particular part of the process, he could only use wet gas, gas with some fractions in it which are higher than methane. However his complete process would take the tail gas from the polymerization unit, which is practically methane and with some hydrogen in it and would go on and you would feed that into plants producing other synthetic chemicals and in that way he would utilize not only, he would utilize the tail gas as well as the part which has been used for making polymerized gasoline.

This question was asked: "Do you know of any compressor cheap enough to handle one and a half or two million cubic feet a day?" Yes, there are plenty of compressors that are suitable for that.

I asked him what vapor pressure this gasoline is and he said about 10 to 12 pounds absolute pressure, which is the same as ordinary stabilized gasoline.

I think that covers the questions which were asked.

THE CHAIRMAN: Have you anything further from the witness, Mr. McDonald?

MR. McDONALD: Yes, there is just one other thing.

Q MR. McDONALD:- As I understand it, Mr. Brown, the processing now suggested, which you have described and which are comprised in the plants which will be erected in Turner Valley, will use up approximately 10.5% of the wet gas, of the gas

taken in?

A Yes.

Q And that will leave 89.5 per cent available for delivery, containing mostly, containing traces of methane and hydrogen?

A That is right.

Q Which would be useful for heating purposes I presume?

A Yes, the methane would be, it does not affect the caloric value which, of course, might be somewhat less, it is bound to be, if something is taken out.

Q But if that gas, if that 90% is available from these three wells which the Lion Company have and passed through this Plant, there would be approximately 89% of that gas still available to be transmitted into the gathering system for delivery to the Company using the caloric value?

A Yes, it would not affect the value of the gas as a fuel at all.

Q Now if that gas was passed into, say in this particular case, the Gas & Oil Refinery's gathering system and passed through the absorption plant and the polymerization plant there, would there be any benefit to the Gas & Oil Refineries? Would they recover anything additional?

A Well it would be sweet gas.

Q It would be sweet gas to start with?

A Yes, it would be sweet gas after it left our polymerization unit.

Q Would there be any G.P.M. content to it?

A G.P.M.?

Q Yes.

A No, this process takes out everything higher than methane.

Q So there is no element that could be recovered in the Gas & Oil Refineries' Plant?

A No.

Q This gas would simply pass through it then?

A Yes. I would say there are, just traces of methane, but only traces as we have taken them all out.

Q Now then, when you say this is sweet gas, have you any idea as to the percentage of hydrogen taken out, I mean of the sulphur taken out, would it be completely sweet?

A Yes, he has a record here of a test made on the gas where he found a percentage of hydrogen sulphide present from the gas from Sunray Well and it is under this heading, and he has these notes:- The raw gas check analysis, Lion-Sunray Well, and it is taken from page 89 of his notes, 6 months, 1943, Book 77(B) and he made this test using the standard method of testing for hydrogen sulphide and these are the results: The above results indicate the presence of 3.8% sulphur compound in the raw gas from the oil separator.

He also made this statement which is large enough to be of commercial interest for producing detergents, etc. as well as sulphur and hydrogen acids but he did make that test of 3.8% sulphur which is to be removed before the gas can pass through his polymerization unit.

(Go to page 6215)

Q Now Mr. Brown, have you seen any calculations for costs as to the cost of the equipment required for this pilot plant ?

A The cost of the equipment for this part of the plant ?

Q Yes.

A I have not seen any details of cost, no.

Q Have you any idea of the amount proposed to be expended to deal with the million and a half to two million cubic feet of raw gas.

A I think that point was brought out in the last.

Q If it is in the other evidence.

A I think it is in the other evidence. I have a flow sheet of the equipment.

Q Well if you could read it we would know what is required on the question of cost.

A Estimated cost.

Q I think it was $75,000.00.

A Well it would be quite difficult from this flow sheet to even make a detailed cost sheet up I would say.

Q Well if you would.

A As far as the flow sheet is concerned I can go through the process again.

Q Well no. I think if you would file that as an Exhibit it might be of some assistance to anybody reading the record.

A That is the flow sheet. This is the flow sheet of the catalyst polymerization process designed by C. Gower, Regina, Saskatchewan, February 23rd, 1943. This large flow sheet is of the polymerization process. This small one is a combination of the two.

Q Just attach them together.

SHEETS REFERRED TO NOW MARKED EXHIBIT 170.

MR. McDONALD: I think Mr. Plotkins would like to ask the witness something.

Q MR. PLOTKINS: Mr. Brown, to resume the whole process, is it a fair statement to say that approximately ten percent of the wet gas is converted through this process into saleable gasoline ?

A Yes.

Q Gasoline is ready to use either for blending or for automotive purposes ?

A Yes, I think it is.

Q Now in the papers that you have read I think there was a continuation or at least a chemical reaction list of what happens to the tail gas. Would you be good enough to give a brief or read it out, translate the symbols into actual products ?

A Shall I read you the paper as he gave it ?

Q Yes.

A On the second half of this project or the second part. I might mention in here, Mr. Gower is prepared to supply the production technique pertaining to all the processes listed herein and moreover he also has witness photographs, photographs that were taken and witnessed, taken of all the laboratory equipment and pilot plant equipment used and assembled for all of his experiments. This paper is entitled "Western Industrial Projection".

The object of this paper is to show the practicability of utilizing the raw materials available in western Canada for the production of materials necessary to the existence of the country and at the same time providing industry large enough to absorb an appreciable number of persons both skilled and unskilled in continuous employment.

Q Excuse me Mr. Brown, what I wanted you to read was the actual chemical reactions without going into a lot of manufacturing details.

A Yes, I can give you that. I will start here. In the production of high test gasoline from wet gasses of the west recoverable proportion has been found to be from two to three percent which means considerable loss per thousand cubic feet of gas processed. If, however, a use can be found for this otherwise wasted gas we have made progress in the right direction. Our first step in this direction is illustrated in the following reaction.

Reaction (1)

Wherein the gas is burned to produce carbon dioxide, heat and nitrogen and carbon dioxide is used with more natural gas to produce formaldehyde according to process and he has given the reaction, methane plus oxygen from the air gives carbon dioxide plus heat, plus nitrogen, plus water. The heat produced is used to produce electricity cheaply, so necessary to manufacture a carbide by means of the electric furnace, and the nitrogen is combined with the carbide to produce cyanamide.

Cyanamide finds an immediate market in the parent industry by decomposition with water to form ammonia which is combined with the carbon dioxide to form urea. Further, cyanamide is valuable as a fertilizer and as such should find a readily developed market.

Calcium carbide, produced in the course of the process, has a marketable quality in the field of welding as well as in the form of starting material for other chemical industries. The production of these items illustrated briefly

in the following outline appear advantageous. The carbon dioxide produced from Reaction (1) is treated with methane in the presence of a catalyst at elevated temperatures to produce water gas, according to the following:

Reaction (2)

Carbon dioxide plus methane, plus heat, plus catalyst gives carbon monoxide plus hydrogen. The reaction products of the above are used to produce formaldehyde by heating under pressure in the presence of a catalyst, when the following reactions are brought about.

Reaction (3)

Carbon monoxide, plus hydrogen, gives formaldehyde. The formaldehyde thus produced is dissolved in water to form Methylene Glycol, or formalin, thus:

Reaction (4)

Formaldehyde plus water, gives formalin, the concentration attainable is approximately forty percent as formalin. The production of urea requires ammonia and carbon dioxide. It is quite possible to produce ammonia on a small scale profitably by the cyanamide process, in which the nitrogen obtained in Reaction (1) is combined with calcium carbide, produced from western coal and lime by electric furnace, according to equations below.

Recation (5)

Lime plus coke, gives calcium carbide, plus carbon monoxide gas. Carbon monoxide from reaction (5) is returned to the process for further production of formalin and the calcium carbide passed on for the production of cyanamide by treatment with nitrogen from Reaction (1).

Reaction (6)

Calcium carbide, plus nitrogen, plus heat, gives cyanamide plus carbon or coke. The cyanamide is now decomposed with water to produce ammonia for the production of urea, as follows:

Reaction (7)

Calcium cyanamide plus water gives ammonia plus calcium carbonate. The calcium carbonate from Reaction (7) is calcined to lime as follows:

Reaction (8)

Calcium carbonate, plus heat gives lime plus carbon dioxide. The lime from the above is returned to the process for the production of more carbide and the carbon dioxide is returned for the manufacture of additional formalin. The ammonia is made to react with carbon dioxide from Reaction (1) to produce urea as shown below:

Reaction (9)

(a) Ammonia plus carbon dioxide gives carbamide. The carbamide from (a) is extracted with water and subjected to distillation for the production of urea as shown at (b).

(b) Carbamide gives urea plus water. Urea from the above is then combined with formalin from Reaction (3) to produce dimethylol-urea in the form of syrup to be used in the manufacture of building materials, according to Reaction (10).

Reaction (10)

Urea plus formalin gives Dimethylolurea and this latter material is the syrup with which he plans on impregnating soft woods of Western Canada to make a water proof, fire proof building material and make it quite cheaply.

And he concludes, thus we see that high

test gasoline, formaldehyde, cheap electric power, ammonia, carbide and urea, as well as fertilizer, are all produced and form the nucleous of an independent industrial project which can provide employment for many in addition to bringing untold wealth to the prairie provinces.

It might be well to point out that this paper is based on process technique and reactions both of which are long established and both of which have been used to build industrial empires. There would appear to be no good reason why they should not be utilized to the advantage of western Canadian provinces in providing markets for available materials and in building an industry which is far-reaching and wholly sound economically.

That is dated January 31st, 1946, by C. Gower.

Q Mr. Brown, are you familiar with the absorption plant process in Turner Valley ?

A The absorption plant process in Turner Valley. Well I have worked in that line of work while I was with the Royalite.

Q Now for the record, in the absorption plant process, how much is actually recovered of marketable natural gasoline ?

A Absorption gasoline. Well I don't know what the figure is, the exact figure, but they say two to three percent.

Q What happens to the balance of the heavy end propane.

A Well the light end.

Q The heavy end in the gas and light ends of the absorption process.

A Well at the Royalite absorption plant a cut is made between propane and iso-butane and they try and cut off everything of the fractions lighter than iso-butane if possible.

Q What happens ?

A That is propane, ethane and methane. The cut is made there and those go out overhead from the absorption plant and are flared as far as I know.

Q So at the present time outside of the two or three percent that are recovered, as seventeen or approximately twenty-five to twenty-seven natural gasoline the balance is wasted, burned or flared ?

A Yes. The tail gas from the absorption plant as you know goes to the Calgary market.

Q No, but what I want to establish is outside of the methane the gas that is pushed into the treating plant, the scrubbing plant all the balance between two and three percent and the ten per-cent at the heavy end, that are in the gas at the present time are flared at the present time and wasted ?

A Yes.

Q And in the absorption plant process no scrubbing of the sulphur compound takes place ?

A In the absorption plant ?

Q Yes.

A Well some hydrogen sulphite is undoubtedly removed during the absorption, but that is not where the main removal takes place. That is not where the main scrubbing takes place. The main scrubbing is done in the Girbotol.

Q So that a fair statement is while absorption process removes some of the contents it is not fit for market as fuel. It has to be scrubbed further ?

A That is right.

Q And this process, this Gower process, it is fair to say then in resume that not only does it take out approximately 10% of the heavy ends and convert them into marketable stable gasoline, but it also scrubs gas and delivers it ready for market?

A That is right.

Q And would you have any information or facts to give to the Board as to the approximate cost of scrubbing in this process in relation to the entire process?

A Well, I would say the cost of scrubbing - what is the cost of scrubbing as done by the Royalite out in the Valley now?

Q I do not know. I would like Counsel to probably give us the figure.

MR. McDONALD: It is in the neighbourhood of 2 cents per thousand from the submission made.

A 2 cents per thousand?

Q MR. PLOTKINS: Yes, that is the figure it costs under the Girbotol process. Now, what would be the cost incidental to scrubbing in this process in relation to the entire cost of conversion of the heavy ends?

A I would say it would be very small, the cost of scrubbing.

Q The cost of scrubbing would be very small?

A Yes.

Q And that would mean that if this process was substituted for the present absorption plant, and theymanufactured gasoline instead of the high test natural gasoline, that the cost of scrubbing would not enter into the picture insofar as delivering gas to the consumer market, it would be absorbed in the cost of manufacturing gas?

A I would say so.

Q That is a fair statement?

A I would say so.

Q That is all.

THE CHAIRMAN: Mr.Chambers?

.....

CROSS-EXAMINATION BY MR. CHAMBERS.

Q Mr. Brown, can you give us any idea, assuming you were using a million and a half per day, as to how much liquid product would be turned out of this plant?

A How much liquid product?

Q Yes?

A I can find out by making a small calculation here.

Q THE CHAIRMAN: A gallon a thousand cubic feet would be 1500 gallons?

A Yes, it would be 1500 gallons.

Q MR. CHAMBERS: About 1500 gallons?

A Yes, that is right.

Q Can you give us any idea what that 1500 gallons would have to sell for in order to pay the capital charges and the operating costs in connection with the plant such as you have described?

MR. PLOTKINS: Mr.Chairman, I object, because I do not believe that the witness is competent to answer.

THE CHAIRMAN: I was going to ask him the same question myself.

THE WITNESS: I was not asked to go into the costs whatever.

Q I see.

MR. CHAMBERS: That is all I have.

THE CHAIRMAN: Mr.Steer?

MR. STEER: No questions.

THE CHAIRMAN: Mr. Harvie?

MR.HARVIE: No questions.

Q THE CHAIRMAN: Mr. Brown, do you know the production of Mr. Plotkins' three wells, the daily production?

A The daily production?

Q Yes? Is that already on record?

A I do not think so. Here is an average here for the three wells, three months' average say, was 32 million cubic feet of gas per month.

Q 32 million. That would be about a million a day roughly?

A I would say so. And I would say I have some detailed figures on that, on the daily production in March.

Q Well, that would be roughly a million a day?

A Yes, that would be roughly a million a day.

Q Now, could your pilot plant, operate economically on a million per day, or would you require to go and get gas from some other source?

A Well, you were thinking of a million?

Q A million and a half?

A A million and a half or two million. I think he was planning on getting some gas from low pressure wells.

MR. PLOTKINS: Mr. Chairman, may I answer that?

MR. CHAMBERS: I suggest that Mr. Plotkins not give the evidence. He is not in the witness box. Let the witness do it.

THE CHAIRMAN: Yes, I think so too.

THE WITNESS: I think some mention was made of that in the last hearing, and I will look that up.

Q THE CHAIRMAN: It doesn't matter. Mr. Plotkins said he could use low pressure gas, but what I am getting at is, how much would he need to operate the plant economically?

A If his own production is a million a day and he requires a

million and a half, he would have to gather at least a half a million per day from some other source.

Q What is the pressure in Mr. Plotkins' wells?

A The No. 1, 1290 pounds; No. 2, 1470 pounds; No. 3, 830 pounds.

Q Then he could use gas from low pressure wells as low as 25 pounds pressure?

A Yes, just enough pressure in the line to force it to the plant, because the plant takes it in at the lowest possible pressure.

Q And how would the pressure be reduced from the well having 1290 pounds?

A One way to reduce it would be to put it through the gas turbine.

Q You would have to reduce it or it would be quarrelling with the 25 pound pressure?

A Yes. One way of reducing it is to put it through the gas turbine.

Q You mentioned that there were plenty of compressors to be had?

A I what?

Q You mentioned that there were plenty of compressors to be had to handle this?

A Yes.

Q What make of compressor?

A That was his own statement. Mr.Gower said that he could find compressors adequate for that type and that capacity of job.

Q Have you any information as to the price that would be paid to the producers of gas from wells other than those owned by Mr. Plotkins?

A No. I have no information on the cost of the gas whatever.

Q If your residue gas went to the Calgary market, it would require to go through the absorption plant first and the scrubbing plant next?

A What is that question, please?

Q In order that the residue gas of your plant could reach the Calgary market?

A Yes.

Q Nevertheless, it would require to go through the absorption plant and the scrubbing plant to which it is now connected?

A That is right. That is, if the tail gas was discharged under the gathering line.

Q And otherwise you would have to flare it, or make some of these other products that you mention?

A Yes.

Q But let us assume it goes to the Calgary market, it would need to go through the G.O.P., whatever plant it is connected to. Which one is it, by the way?

A Gas & Oil Products at the present time.

Q It would have to go through the Gas & Oil absorption plant and the Royalite scrubber or the Madison scrubber?

A Yes.

Q And would have to stand its share of the cost of the operations although in fact no fraction would be taken out and no sulphur would be taken out?

A Yes.

Q Now, what you have read us, Mr. Brown, is something taken from Mr. Gower's records?

A Yes. That was a more complete record than this.

Q Have you made tests of that kind yourself?

A Myself?

Q Yes?

A Well, I have done work in oil and gas fields, oil and gas industries since, well, practically the last four years.

Robert C. Brown,
Examined by the Chairman

Q What I mean is this, are you able to say as a chemical engineer, that the process which you have described is a good one, and that it has commercial value?

A Yes.

Q Mr. Brown, on what do you base that belief?

A I am speaking of the complete process which he has outlined. When you made the statement that this gas.....

Q No, I am thinking now of the making of gasoline. Are you able to say as a chemical engineer that the process that you have described will result in a commercially valuable operation?

A Well, as far as chemical engineering details go, there is nothing wrong with this process. I do not know about costs. I have never gone into costs.

Q Have you seen the patent, Mr. Brown?

A No, I have not, but I have asked about that, if he was protected, and he said "Yes, I am sufficiently protected that I can put all this on record and more."

Q All right, thank you. Any further questions? Thank you, Mr. Brown.

MR. McDONALD: Mr. Plotkins wanted to deal with several points with regard to the Lion wells himself.

THE CHAIRMAN: All right.

.....

Leon L. Plotkins,
Dir. Exam.by Mr. McDonald.

LEON L. PLOTKINS, recalled, having already been sworn, examined by Mr. McDonald, testified as follows:-

Q Mr. Plotkins, you have a statement to make in regard to the Lion wells?

A Yes. Mr. Chairman, the first question I want to answer is in connection with the volume that is required in this projected plant. In the last two years our wells have been held down considerably. At the present time, and I should say that during that period the No. 3 well was closed in completely for 40 days. The second fact is that the No. 1 well has now been divided into a gas zone and an oil zone, and there is approximately another million cubic feet a day at approximately 30% open flow available in our No. 1 well when the time comes that we can economically process.

Q THE CHAIRMAN: You say that your wells were held down? Did you do that yourself or was it by order of the Conservation Board?

A No, we kept our wells down considerably below the Conservation Board's figure. The other point is in connection with a statement the Chairman made at the last session I attended, and I think it was quite fair at the time. I was not fully familiar with the agreement that had been made. The statement was made by the Chirman that we were on the pipe line, therefore, we could consider ourselves bound the same as anyone else on the pipe line in Turner Valley, at least, on the gathering line. Now, from the inception of these wells in 1942, I made it plain to the British American at the time that they wanted the gas.....

Q MR. McDONALD: Was that the Gas & Oil Products or the British American?

A I beg your pardon.

Q Was it the Gas & Oil Products or the British American?

A The British American. In 1942 we, under pursuance of an order by the Oil Controller, we were compelled to turn ours over to the British American. And at that time I reserved with the Oil Controller, as well as with the British American, the right to not turn the gas over unless they saw fit to build a temporary line or another type of conveyance to utilize the gas temporarily. I told them that as a company we were not interested in revenue, that we would rather forego andlose the revenue than be bound by and have the contract to deliver because we had made plans to utilize it. The result was that no contract was entered into for several years, and the Gas & Oil approached me in pursuance to an Order by the Conservation Board some time later, to the effect that we were not allowed to waste that gas, and we would have to turn it over to someone. During that time the Gas & Oil were quite willing to put in a temporary line to supply some drilling wells with this gas, and they did lay a temporary line, and since the discontinuance of the drilling, they have used that line to gather the gas, and take it through one of the lines.

Q THE CHAIRMAN: You are forgetting about the Natural Gas Utilities Act.

A Pardon?

Q You are forgetting about the Natural Gas Utilities Act. I do know that equipment and machinery were put in for the purpose of handling gas from Turner Valley, including gas from your wells, Mr. Plotkins. Now, what I spoke of at the last meeting, the last time you gave evidence, was this, that if you withdrew your gas from the Calgary market, you would be required to underwrite that investment to the extent of reserves

that you have in the field. The machinery was put in there for the purpose of handling it. I am not interested in your contract with the Gas & Oil Products.

A True, but at the time that this Act was passed, was it made retroactive?

Q No, certainly not. But the machinery was put in to handle your gas, Mr. Plotkins, in connection with other gas in the field that previously was being flared, and now going to the Calgary market. Machinery was put in for that purpose.

A I do not think there will be any conflict if we examine this situation to the logical conclusion, but I want to state the facts. I think in the light of what you say there is no sense of my reading this clause, because you say that we are bound by the regulations that exist.

Q In the meantime, your gas is particularly dedicated to the services of the City of Calgary, and if you wish to withdraw it, then I am afraid you will have to pay some share of the cost of the machinery that was put in for the purpose of handling it?

A Yes.

Q Mr. Plotkins, do you know what your gas reserves would be in, what is that, a quarter section you have? And you have drilled three wells?

A Yes.

Q And are you going to drill the other one?

A That depends on conditions. I do not know.

Q And have you any idea what the gas reserves would be in that quarter section of yours?

A Yes, to this extent, in terms of years. I have no idea in terms of volume, but by accepting the conclusions of the Oil

Inquiry that took place in Calgary, that there are so many years' reserves on an average, and I can safely assume that our quarter section being a high pressure area, will be considerably over average in life.

Q I would like that information if it can be had, Mr. Plotkins. It might have some bearing on your application.

A Well, I can safely say that 17 years' life is available at the present time, if it is held down and produced economically, not wide open naturally. Now, I want to make a statement on the facts that if this plant, if I am permitted, if our Company is permitted to go ahead and to build this power plant, that we will have three wells. It is not necessary that we utilize our wells if low pressure gas is available within a reasonably short distance. That would be another thing. I want to question the evidence of Mr. Brown, the pressures he gave of the closed in pressures, or, at least, casing pressure, probably that is the correct statement, they were casing pressures. It is approximately 200 pounds on No. 1 and No. 2, and 30 pounds on No. 3.

(Go to page 6232)

That means that No. 3 is now being wasted in the atmosphere because the pipe line or the gathering line cannot take it in.

Q Mr. Plotkins, I cannot stop you building five pilot plants if you want to. I have no right to stop you at all. I cannot.

A No but you see we have an investment there and we want to make sure that we are going to come out and pay for it.

Q You want your raw material?

A Yes.

Q That is the only jurisdiction I have and if you can find low pressure wells that will give you your supply I think we will all be very happy to see you succeed.

A If this was an open competitive industry that would be no problem. But we are closed in, Mr. Chairman. The result is if I want to get any gas that was under contract to any other company, I would not expect them to help. Therefore if the Board has jurisdiction to say to me "You must give up your gas to the common good," I feel equally the Board should be placed in a position to say to other companies the same thing.

Q That is you mean with low pressure gas?

A A company that now holds contracts and can prevent me from buying it.

Q And you think that I should tell them what?

A I think that the Act, that the Public Utility Act as it applies to gas gathering, gas manufacturing and gas conversion should make available any raw materials that someone is not in a position to use and is now being wasted.

Q You are speaking of propane now?

A Anything, whether it is propane or heavy ends or light ends.

Q There is no natural gas being wasted now, Mr. Plotkins, except that which is unavoidable at times, and because of the low pressure wells.

A That is all I am referring to. The low pressure wells that is a considerable percentage at the present time in Turner Valley.

Q Will you get me a list of the wells, Mr. Plotkins?

A I certainly will do, or try to. I do not see why it should not be available.

Q Actually, I do not think this Hearing is the proper place to deal with your application. I think this should be a separate application.

A I am making it now so that if I am given access to the low pressure gas that is now being wasted and that serious consideration should be given to it now. This gas from these three wells is being put back into the lime so that it will not be wasted.

Q I do not want to give you advice as to what you should do but I suggest if I were in your position I would be going out trying to make contracts with the owners of the low pressure wells.

A I am doing that myself.

Q And if you cannot do that, then come to me.

A But I am saying it is impossible.

Q Why is it impossible?

A It is impossible because if - I am no better than anybody else. I am in business and I have to protect my investment and protect my livelihood and so has everybody else, in a commercial sense and if I hold a contract on a well and I have a plant to utilize that two years from now, that is the case in a good many wells I have contracted and I do not unless I am compelled by law, I am not going to divest myself of any rights I have. I have made sacrifices and bought and paid for it in many cases and naturally why should I be compelled to give it up unless it is for the public good and the law compels me and unless there

is a very good reason why I should be called upon to do it. However if the gas industry is going to be a public utility and we are regulated, which is quite understandable, then we should be given full rights and I should know whether I can tie up anything or not. I am quite right to expect that.

Q I am not going to be your advisor.

A Another thing I want to point out, the cost involved in connection with this plant. This is only my recollection and I haven't any figures but I am used to dealing with costs in connection with plants and recoveries and markets and I can make a statement I believe which is true that we found that we could pay 5 cents a thousand for the raw gas and manufacture it and come out with a profit. That even in a smaller plant, such as one and a half million cubic feet. Now that was done at a time when the plant would have cost $40,000.00 instead of $75,000.00 today. In other words, today, construction, if you can do it at all, is approximately double for this type of work than it was three years ago. Without going into a lot of detail, I will just give you the reason why. Steel is practically unobtainable and if you do get it, you get what they want to give you and the waste which used to be 2 or 3 per cent is now 50 per cent. Labor is just about the same efficiency or relationship of efficiency, about 60% effecient. Why? For various reasons that I do not need to go into at this stage. You cannot get skilled labor and when you do they are handicapped by the big percentage of unskilled labor. The result is today I am not in a position to go ahead with this construction as I am unable to obtain the materials. We have the steel on order and when conditions are such that we can get the fabrication at an economic figure, in other words I feel that the plant should be able to be built in six months

from now at the most for $60,000.00 whereas now it would cost $75,000.00. At $60,000.00 it would mean, instead of $40,000.00 it would mean that our profit would be reduced and I am not quite prepared now to say that we could still pay 5 cents a thousand for this small plant. I am quite sure that we could do it with a 5 million cubic feet plant. That is the economics of it.

I would like to deal for a few minutes with this question of scrubbing and putting it into the gathering system and whether we are going to lose the benefit of all the work we have done and also be called upon to pay for processing that will not be required. I believe the Board should give serious consideration to the fact that if this process is sound - and I may say that it is not a new one, - Phillips Petroleum 15 years ago done this only in two stages at that time. The Phillips one way they used the polymerization method and another way catylitic cracking. The only difference is that the polymerized the light ends that were probably 50 or 60 per cent unconverted to liquids. The first thing is cracking and cracking only liquifies approximately 30% and the other 70% 15 years ago had to go in the air. Today the other 70% is practically 100% converted to liquids by the poly plant. A poly plant is nothing new. It is at least 10 years old. I worked in 1926 in Coutts on the original or one of the original poly plants and they were patenting the thing. Certainly it is not new. The principles have been known for years but the mechanics had not been established. All Mr. Gower has done is to perfect it and added one to the other and perfected a chain. If that is so and the Board can, through its engineers, take the submission that has been read here and can determine that then they should seriously

consider whether the present Absorption Plant should not disappear.

Q I have no jurisdiction over Absorption Plants, Mr. Plotkins.

A Well at least I can make that statement because I think that the Board should at least make some recommendation to the Government because if we are going to be saddled by law with perpetuating a situation that is unsound economically, then I as a citizen should be able to dispute or combat that law and say the Government should give consideration to not perpetuating that situation.

Q I cannot stop you doing that, Mr. Plotkins.

A I want to ask a question, because I am not probably on sure ground. I understand that this Public Utility Act does put both the Absorption Plant and the Gathering System and the Distribution System under the Board.

Q You had better read it again.

A I did not read it at all and I just assumed that. I have not been able to follow it. It is unfortunate. Coming back to our plant, if we are granted permission to utilize our gas and we push it back into the lime at 100 pounds or better, whatever is required within our range, I think 140 or 150 pounds will certainly do it. We are now putting it in at 80 pounds, so that waste cannot happen to it, why should we pay or be called upon to pay for transporting it and for our share of the charges for the present system of gathering and compressing? But that will only apply as long as we are delivering any gas but if we carry on our process and have no occasion to deliver, we should not be saddled with the cost of gathering and the cost of scrubbing and the cost of transporting to Calgary. That is about the only thing.

Q If you are not sending any gas to Calgary, I do not think any-

one would expect you to pay.

A Then am I able to infer from that that if we were, if our Plant was operating and we were converting 100% of that gas to useful products that we would not be stopped from doing it and we would not be saddled with any costs that at present exist in the field for carrying these various projects?

Q I am not going to answer you that now, Mr. Plotkins. I will tell you about that later on when I have had time to think about it and think carefully about it.

A Well that is about all.

Q You made an application, Mr. Plotkins, and it is going to be given very careful consideration. You can be assured of that.

A I am sure of that.

Q You have submitted evidence here and I am not going to treat it lightly, I assure you. It will be given every consideration but it will be some time before you hear any results.

A I realize that. I will say in the meantime, in order to facilitate and probably to settle the question that I am going to make a real endeavour to go and see if I can get low pressure gas in that area or gas that I can afford. Now the problem in connection with gathering low pressure gas in my particular location is difficult because I happen to be in a reasonably high pressure area and the only one well I know of is the one immediately adjoining us. B.A. Brown No. 1, and that is approximately 200,000 cubic feet. Therefore to that one the cost of the pipeline would not be very great but if I had to go a mile or two miles or three miles to gather my gas, then I could not afford, at this stage at least, to pay 5 cents for it and I may have difficulty in getting any contracts when the price figure is such as that. There may be a possibility later on for low pressure wells to get gathered in and to

participate in the general market.

Q One of your own wells is a low pressure well?

A One of my own wells is a low pressure well, yes.

Q And what does it produce per day?

A Approximately 250,000 cubic feet under present flow conditions.

Q And those two together would only give you about one-third of your needed capacity?

A There is another well, in fact there may be two wells but due to Conservation Board methods of operation they are not producing continuously. The result would be that in a Plant such as ours we would want continuous production. I do not know how the Conservation Board would look at the operation on a continuing basis and whether they would change their method of calculation or not. Sooner or later they will have to when that gas enters into the picture to a greater extent than it does today. The Conservation Board will then have to give value to gas production as well as oil. At the present time they do not say that and it might make it difficult for me to contract or even get temporary gas from wells of that nature when they are stop cocked. In fact I want to say now that the usual way of handling a low production well in Turner Valley today is to stop-cock, that is intermittent operation, and that makes it very difficult to process gas from it.

THE CHAIRMAN:- Is there anything further?

: : : : : :

CROSS-EXAMINATION OF THE SAME WITNESS BY MR. CHAMBERS.

Q This 5 cent figure, Mr. Plotkins, I understand that is just a general figure at the moment?

A That is right.

Q That the plant could afford to pay. Is that 5 cents at the Plant or at the well-head?

A In our case the costs of the small operation, we did not expect to go three or four miles. We expected to put in a series of small plants which would be much more economical than one big plant and gathering system and it is my submission that as wells become depleted, and it does not require very many wells to make 5 million cubic feet because, as I say, I think that when that time comes the Board will let us run these wells on a different basis and so I am safe to say we will be paying 5 cents at the well.

Q At the well?

A At the well-head.

Q As I visualize it, the gas that you would need in these Plants must come from either one of two places, either the low pressure wells that are not now connected to the gas gathering system or wells would be disconnected from the existing gas gathering system and going to your plant?

A That is right.

Q And if it comes from the low pressure wells that are not connected, somebody has to build gathering lines and compressors?

A Beg pardon, I did not follow that.

Q If your product for this plant comes from the low pressure wells that are not presently connected to the existing system?

A That is right.

Q Somebody has to build the gathering lines?

A That is right.

Q And as I take it from what you have said to me just now, you assume that if wells are not too far away, this plant could pay the well owner 5 cents at the well head and the Plant would build its own gathering lines?

A That is right. Part of the plant would be the gathering lines. In other words, the Plant would consist of gathering

lines, processing plant and compressors and so forth. It would be a self-contained unit.

Q And so far as these gathering lines are concerned, with the Plant you would build to get the product from the low pressure wells, you would not expect that those should be treated as a utility under the Act and a return guaranteed on them and so on?

A On no, we would expect to be subject to the Act insofar as any waste tail gas.

THE CHAIRMAN: Anything further?

: : : : : :

CROSS-EXAMINATION OF THE SAME WITNESS BY MR. McDONAID.

Q Just to make it clear, for the purposes of this pilot plant you are asking the Board to make available to you 10% of the gas produced from the Lion-Sunray wells, or any further wells you can contract?

A No, I do not stop there. Any gas from our wells or any other wells should be made available or gas that we need to process into saleable products which may be 10% at one time and sometimes get to 90 or 100%. This process that was described is only one part. The other part utilizes the tail gas and that will come later.

Q So that you want it dealt with now on the basis of approximately 100% of the gas being utilized by your plant?

A I want it dealt with on the basis of a pilot plant that will utilize only the heavy ends and will push into the lime the tail gas that we have, not necessarily forever. In other words, later on we will use some of that as we build additional branches of this pilot plant and the whole thing will be a pilot plant. We just will withdraw some more gas and the

L. L. Plotkins,
Cross-Exam. by Mr. McDonald.
Cross-Exam. by Mr. Chambers.

rest of it will go into the pipeline.

.....

CROSS-EXAMINATION BY MR. CHAMBERS.

Q Just one question arising out of Mr. McDonald's questions. In the first instance, as I understand it, the tail gas from this pilot plant you are going to put that into the system coming to the Calgary market?

A Yes.

Q But you do not want to donate it to that Calgary market for all time. You want to divert it into your system and use it in your process, is that right?

A That is right. Because that is more economic and we can produce more value out of it than as fuel.

THE CHAIRMAN: Mr. Steer?

MR. STEER: No questions.

THE CHAIRMAN: Thank you, Mr. Plotkins.

A Thank you very much, Sir.

THE CHAIRMAN: Have you anything further on that phase of it, Mr. McDonald?

MR. McDONALD: No, sir.

(Go to page 6242)

MR. MAHAFFY: Mr. Chairman, I am going to call Mr. Scrimgeour of Gas & Oil Refineries Limited. I would just like to say this to you, sir, before Mr. Scrimgeour goes in the box, that as you well know of course we have not been present during the many sessions of this Hearing and I do not want that to be misinterpreted, also, I wish to say perhaps in explanation of the attitude which we will take both in the submissions and perhaps it may come out in the evidence, that we have not wrongly I hope taken the attitude in respect of your investigations that we are a very small portion of the gas situation in Turner Valley at the present time. We realize that as I say we hope we have not passed things over to to great an extent, but this attitude will be reflected in many ways. For example, in connection with the price of gas we have not much to say because we feel being such a minority operator in respect of actual gas operations that inevitably we must fall in line with whatever the Board decides is a fair price for the majority, and now as I say sir that is not only the reason why we have not followed the proceedings more closely, but will also explain perhaps some of the figures which we will submit now and the attitude we take now.

HENRY B. SCRIMGEOUR, having been duly sworn, Examined by Mr. Mahaffy, testified:

Q Mr. Scrimgeour, what is your position with the Gas & Oil Refineries Limited ?

A Accountant, Mr. Mahaffy.

Q How long have you been employed by Gas & Oil Refineries Limited or associated companies ?

A With the associated companies since 1935.

Q And I take it you have been with Gas & Oil Refineries Limited

ever since -

A It was incorporated in 1943.

Q It was incorporated in 1943 ?

A 1943, correct.

Q And where is the plant operated by Gas & Oil Refineries ?

A At Hartell, Alberta.

Q That is in the Turner Valley field ?

A In the Turner Valley field.

Q Just in a few words, what is the nature of the company's operation there ?

A Ninety-five percent of our operations are the refining of crude oil which is purchased from the wells in the vicinity of the refinery. Six percent I think it is of our throughput originated from natural gas and is processed in our absorption unit.

Q Now how long have those absorption units been in operation, just roughly ?

A They commenced operations under Gas & Oil Products Limited on October 1st, 1934.

Q Then subsequently I understand the absorption unit, in fact the absorption units and refinery were sold by Gas & Oil Products ?

A To Gas & Oil Refineries Limited, correct.

Q That was in 1944, is that right ?

A 1943, Mr. Mahaffy.

Q So that roughly speaking absorption plant operations have been carried on by one or other of the two companies since 1934 ?

A 1934.

Q Now Mr. Scrimgeour, I wonder if you would take your Report #1 which has been filed with the Board and the report Mr. Chairman

you will observe is not long and I am going to ask Mr. Scrimgeour to read it, and, Mr. Scrimgeour as you go along, if you feel there are any spots here where you would like to add any explanatory remarks, please do so as you go along.

GAS & OIL REFINERIES LIMITED, REPORT #1, marked as Exhibit 171.

A Mr. Chairman, Report #1.

Wet Gas Gathering Lines and
Dry Gas Distributing Lines

Capital Costs and Operating Costs

I N D E X

S C H E D U L E S

Report #1

1. We beg to submit Report #1 showing Capital Costs and Operating Costs of our Wet Gas Gathering Lines and Dry Gas Distributing Lines. The volume of Wet Gas available to our Absorption Plant at the present time is only approximately 15% of maximum capacity, consequently our Operating Costs will not be comparable to the operating costs of other plants operating at or near maximum.

2. Gas & Oil Refineries Limited was incorporated on April

1st, 1943 and purchased from Gas & Oil Products Limited their Absorption Plant and Crude Oil Refinery situated at Hartell, Alberta. The basis of the purchase price was an appraisement made by General Appraisal Company Limited of Vancouver, B.C. and dated September 21, 1942. According to this valuation our total investment in pipe lines is $265,986.97. In August, 1944 an accurate physical measurement was made of our whole pipe line system in order to accurately break down costs under the headings of Gas Gathering Lines, Crude Gathering Lines, Dry Gas Distributing Lines and Water Lines. This inventory in detail is submitted under Schedule "A" attached hereto, and Crude Gathering Lines and Water Lines have been eliminated from the total figure as not being the subject matter of this submission.

3. Operating costs for all pipe line maintenance were broken down in 1945 and apportioned to the three systems. The amount spent to maintain the gas system was $2,049.50 and this figure has been considered as normal and is used in the final operating statement submitted under Schedule "C" attached hereto.

4. Administration Head Office expenses have been averaged for the years 1943 (9 mths.), 1944 and 1945 and are as follows:

	1943	1944	1945	Total
Office Supplies:	361.34	371.93	310.17	1,043.44
Printing & Stationary:	1,242.27	938.49	1,066.32	3,247.08
Telephone & Telegraph:	11.08	14.78	18.07	43.93
Travelling Expenses:	1,593.45	1,250.00	500.00	3,343.45
Professional Services:	503.00	1,580.25	1,808.34	3,891.59
Head Office Salaries:	7,249.64	10,889.28	10,889.28	29,028.20
	$10,960.78	$15,044.73	$14,592.18	$40,597.69

$40,597.69 ÷ 33 x 12 = Yearly Average $14,762.79

This yearly average of $14,762.79 has been apportioned to costs in the ratio of Gas Line Investment to total investment which is 14.4704% ($204,441.95 ÷ $1,412,829.77) resulting in an annual charge for administration expense of $2,136.23, which figure is used in the final operating statement submitted under Schedule "C" attached hereto.

5. Working Capital has been included in the final operating statement calculated at 8% of the operating and administration expenses, resulting in a figure of $334.86 as follows:

Annual Operating Costs:	$2,049.50
Annual Administration Expenses:	2,136.23
	$4,185.73
8% of $4,185.74	$ 334.86

Might I interject there, Mr. Chairman, and say it was my intention in preparing this of taking one-eighth which is twelve and a half percent, but due to an oversight I put tho eight in the electric calculator and it resulted in 8% instead of twelve and a half percent.

6. Reserves of Wet Gas available to our Company have been based on the report of Madison Natural Gas Company, Limited, dated February, 1945 and identified as "Report M-3" Available marketable Reserves Table #5, which shows reserves of Dry Gas available to our Company. As the Gas Gathering Lines are used exclusively to transport Wet Gas, we have used Column #3 "Total Wet Gas" and have adjusted same to arrive at the total reserves of Wet Gas available as at April 1, 1943, the date on which our Company commenced operations. According to these calculations the Reserves were 37,298,310 M.C.F. which would be exhausted in 1963 by taking a 10% decline of declining

volume. Schedule "B" attached hereto shows these calculations.

7. We have taken the figure of 15.8333% as the rate of return which we consider the Invested Capital should be entitled to earn. After deducting Income Taxes at 40% this leaves a net of 9½% for our shareholders which we consider fair and reasonable for an investment of this nature.

8. Depreciation has been calculated on a "throughput basis" by dividing the total reserves of 32,298,310 M.C.F. into the Capital Cost of $204,411.95, resulting in a rate of .5481265 cents per M.C.F.

MR. HARVIE: Should that 32 not be 37 million. You see you use 37 in paragraph 6 ?

A Have I made a clerical error there.

THE CHAIRMAN: In paragraph 6 you have a reserve of 37 million but that is at 1st of April 1943.

A I apologize Mr. Chairman, for a stenographic error in the submission. It should be 37 million.

9. Our opinion has been requested as to the apportionment of total Wet Gas Gathering Costs between Absorption Plants and Residue Dry Gas. In our opinion the total costs of gathering wet gas should be included as part of the operating costs of the Absorption Plant and the Revenue from the sale of residue Dry Gas should be added to the revenue derived from the sale of absorption gasoline, High Vapour Pressure Gasoline and any other By-Products which may be now or hereafter recovered from Wet Gas. The product transported by the Gas Gathering Lines is a mixture of Dry Gas and Casinghead Gasoline and it is only after this mixture has been processed by the Absorption Plant that these component parts are separated. Total costs of

operating the Absorption Plant and maintaining the Gas Lines are recoverable from the revenue derived from the sale of all products contained in the Wet Gas and we can see no advantage in complicating monthly calculations to apportion relative costs to separate revenues, as the same well operator receives his share of all revenues, whether on an 80/20 basis or such other basis as may be determined by the Board.

10. As an alternative suggestion we submit the basis in effect for oil and gas fields in certain areas of the United States and incorporated in agreements of the Natural Gasoline Association of America whereby the revenue from sale of Dry Residue Gas is divided on a 50/50 basis between Absorption Plant and well operator in the ratio that his Dry Gas content in the Wet Gas delivered bears to the total.

MR. FENERTY: I wonder if Mr. Scrimgeour could explain that to us. I have difficulty in applying this 50/50 ratio.

A The metered volume sir at each well is wet gas. That is delivered to the absorption plant and the absorption gasoline is extracted and a portion remaining is considered dry gas. There is certain loss in operation when you take out the absorption gasoline out of the mixture you arrive therefore at a less volume of dry gas and our suggestion is that the revenue from the dry gas which eventually reaches the market be divided on a 50/50 basis between the absorption plant and the well operator. That is the revenue be divided on a 50/50 basis.

MR. FENERTY: I have that 50/50 but I do not see the ratio of dry gas and wet gas. It seems you are using two ratios.

A Well 50% sir of the revenue would be set aside for distribution amongst the well operators. We would then have to take the

total wet gas that came into the absorption plant in any period, convert it to dry gas and then take the proportion of each well to the total and proportion the revenue in that ratio.

Q All right, I will work that out from the printed record.

A That is the regular monthly calculations that all of the absorption plants are doing today.

11. It has been suggested that information should be submitted of the Historical Costs of the assets under review. Our Company purchased these assets from Gas & Oil Products Limited based on an appraisement of General Appraisal Company Limited of Vancouver, B. C. dated September 21, 1942, and while both Companies are under the same executive management, neither is subsidiary to the other, as an entirely different group of shareholders own the shares in each Company. We have therefore predicated our submission on the basis on which the purchase was made.

Respectfully submitted,

GAS & OIL REFINERIES LIMITED

"H. B. Scrimgeour"

Accountant.

Calgary, Alta.
March 22, 1946.

Now am I required to read all the figures here ?

Q THE CHAIRMAN: No, if you just go through them briefly, and explain the basis on which they are made out, Mr.Scringeour, that will be sufficient?

A Schedule "A" is a recapitulation of the pipe line capital costs distributed between four systems, based on appraisement dated September 21st, 1942, made by General Appraisal Company Limited, Vancouver, B.C. We have in the first column the size of the pipe. In the second column the number of feet. These were all physical measurements that we made. We have the basic rates resulting in the value, and I took that value, and by the inventory taken by our field staff, I was able to distribute each size of pipe and trenching to the heading which is required. No.1 heading was our wet gas lines. The No. 2 is crude lines. 3 is our domestic gas lines, and No. 4 is the water lines. And this simply gives us a distribution of the whole system.

I think I should explain that we have been very careful, Mr. Chairman, to prove that we have not included in any of our costs assets that strictly speaking apply to crude oil operations. This submission is, of course, on the wet gas gathering lines, and I have attempted to show that no asset that applies to crude or water has been included in our figures. Then I have recapitulated that at the bottom in order to show the capital investment in gas lines.

Now, Schedule "B" is our table of reserves of wet gas, excluding crude and gas cap wells, calculated at a 10% decline or declining volume. We had to plagiarize, Mr. Chairman, in this submission, Schedule "B", by using the tables submitted by the Madison Natural Gas Company, and by adjusting backwards I was able to arrive at the reserves which would be available to our company on the date of its incorporation, April 1st, 1943,

which, as you notice, was 37,298,310 MCF, and by projecting this to 1963, we show where the reserves were exhausted on that date. I also placed alongside of it, as a matter of interest, the actual withdrawals against the years in which they applied, and it should a matter of interest to know that they are coming out very, very closely, considering that this is an annual statement and not a monthly statement.

Then the next Schedule is the Operating Costs of Gas Lines projected to 1963, and that is Schedule "C". The first column is the year; the second column is our annual maintenance which we have considered as fixed for the full period; the administration expense which we have considered as fixed; the interest on the working capital; the depreciations calculated on the throughput basis, which was the figure arrived at by dividing the throughput into the capital costs; the next is the return on the investment at 15.8333%. We have used the mid-year method of arriving at that, and have reduced the investment by the depreciation, resulting in a declining investment annually, and have calculated the interest on the declining amount. Then I have, towards the end here, the total costs annually and by dividing that by the annual throughput, we get the cost per MCF which, it should be pointed out, is almost consistent from 1943 to the end, an average of 1.3797 cents per MCF. That is the end of Report No. 1.

THE CHAIRMAN: We won't deal with No. 2, Mr. Scringeour, until after the cross-examinations on No. 1. Is there any cross-examination, Mr. Chambers?

.....

CROSS-EXAMINATION BY MR. CHAMBERS.

Q Mr. Scringeour, would you please turn to pages 2 and 3 of Exhibit 171? As I understand it, the first suggestion made is that all the gathering costs of the wet gasoline from the wells to your absorption plant would be, in the first instance, at least paid by and charged to the absorption gasoline?

A Correct.

Q And then your first suggestion is that the absorption plant will sell or realize so much for the wet gasoline extracted and it will get something for the dry gas, and, as I understand it, the first suggestion, that the absorption plant, having paid all the gathering costs and having processed it in the plant, would retain 80% of anything that is realized, and pay 20% inclusive, is that right?

A That is correct.

(Go to page 6253)

Q And does that proposition assume that the absorption plant would take over the conveyance of the residue gas from the absorption plant to the Madison scrubber ?

A That would be a matter of arrangement Mr. Chambers. At the moment we are paid at our property lines, at the absorption plant, receiving two cents for a portion of it, and the other is deferred until the Board sets the rate. If the Madison should feel that a charge should be made for transporting between their scrubbing plant and our property line, I think our Company would be glad to sit down and discuss it with you.

Q But so far as the producer is concerned, the first proposition is that he will get 20% of both the wet gasoline realization and of the residue gas realization ?

A Correct.

Q And then, as I understand it, Clause 10 on Page 3, is an alternative suggestion that envisages that the absorption plant would still pay or provide all the gathering system ?

A Yes.

Q From the wells to the absorption plant, that is right ?

A Correct.

Q And the second suggestion is that of the gross proceeds realized by the absorption plant for the wet product it would still pay 20% to the well owner, but so far as the residue gas is concerned the well owner would get 50% of the net realized by the absorption plant, is that right ?

A Correct. That is 50% of the dry gas.

Q Yes.

A Yes.

Q That would be on the net realization, would it not ? What I was thinking about there, Mr. Scrimgeour, is there might be

some costs either direct or indirect of getting the dry gas to the market ?

A Yes, on the net revenue to the absorption plant.

Q That is all. Thanks.

A Mr. Chairman, might I add to my remarks in connection with Mr. Chambers' enquiry.

THE CHAIRMAN: Yes.

A As pointed out in the opening paragraph our absorption plant is only operating at 15% of capacity and of the total of the field I do not think we are more than probably 5%. I have not worked it out but I understand it is approximately 5%. We therefore feel that we are a very small operator in the field. And it was felt that if the Board were to take all operating costs of the absorption plant, let us recover our costs first on the surplus too there would be nothing for the well operator. In other words, our second submission, Report #2, will show that it requires the total revenue to operate the plant and we still have a deficit. If we had to submit to the Board that that was our basis it would have resulted in having our well operators approach us to cancel contracts and move elsewhere, so that we, therefore, felt that an alternative suggestion should be made following a procedure used in the United States natural gas field that incorporated in the contracts of the Natural Gas Association of America, whereby the absorption plants operate almost entirely depending on the G.P.M. tests, but almost without exception on an 80/20 basis and a 50/50 basis on the residue and its dry gas, so that we have submitted that, sir, as an alternative suggestion, knowing that our #1 would be inoperative.

THE CHAIRMAN: Mr. Fenerty ?

MR. FENERTY: No questions.

THE CHAIRMAN: Mr. Steer ?

CROSS-EXAMINATION BY MR. STEER:

Q Mr. Scrimgeour, when was the refinery built that you spoke of ?

A At the very commencement of our absorption plant, sir, we had a small still which we used to process or prepare absorption oil used in the absorption plant operations. That could be called a small refinery. When crude oil was discovered at the Brown well we immediately got busy as soon as other wells came in and we saw that we had a crude field, we enlarged that still and that was in 1938, I think is the year. Could I have that verified by our Production Manager ?

THE CHAIRMAN: Yes.

A 1938, sir, was the year in which we added to the still and really entered into crude oil refining.

Q MR. STEER: You made the statement that 95% of your operation today and since 1938 has been the refining of crude oil ?

A Has been the refining of crude oil, correct.

MR. MAHAFFY: I do not want there to be any misapprehension. My learned friend said 95% today and since 1938.

Q It is true, isn't it, that it has been a progressive change ?

A Yes.

Q There was not 95% in 1938 ?

A No.

Q That is what I wanted to clear up.

Q MR. STEER: And that has not been the case since 1938 ?

A No, the absorption plant throughput has been steadily declining from a high in 1934 of 65 or 70 million cubic feet per day down

to today when we process approximately 10.

Q Has there been any significant change in the location of gathering lines from the time that the absorption plant was first installed until the present time ?

A The lines are continually changing, sir, as new wells make contracts with us. It is a continual process.

Q That absorption plant operation then was your first operation ?

A Correct.

Q Yes. And your gathering lines from 1934 on were built for the purpose of supplying wet gas for that absorption plant ?

A That is correct.

Q This first still that you spoke of was for the purpose of manufacturing your absorption oil to be used in the absorption plant ?

A Correct.

Q Is that right ?

A Correct.

Q Now that absorption plant operation, I take it, from 1934 on was a profitable operation ?

A My submission sir is from Gas & Oil Refineries Limited who commenced operations on April 1st, 1943. I am not taking the stand on behalf of the previous owners of that plant.

Q You are employed by Gas & Oil Products Limited ?

A Correct.

Q And are you prepared to tell us whether their operations from 1934 on were profitable operations ?

A Yes, I think I could say they were.

Q And they were profitable having in mind the ordinary charges against such an operation including the return of capital, is that right ?

A That is correct.

Q And I suppose you would be in a position to tell us how much of the original capital investment of the absorption plant has been returned by way of depreciation, would you ?

A No sir, not on this submission.

Q You would be able to, however, get those figures ?

A They could be obtained.

Q You could obtain them ?

A Yes, I could obtain them.

Q Yes. And if we were to compare the appraisal value of Gas & Oil Refineries property as contained in this Exhibit 171 with the book value after depreciation has been accrued since 1934, the appraisal value I suppose would be very much larger than that book value ?

A Obviously, yes.

Q Can you tell us what the difference is ?

A Not in my head, sir.

Q Can you tell us to what extent the investments in gathering lines have been written off ?

A Not from memory, sir.

Q Aren't they pretty well wholly written off ?

A Not necessarily.

Q You wouldn't have any idea from memory ?

A Not from memory, sir, no.

Q Would you be prepared to give us the book value of the assets that are contained in this document Exhibit 171 ?

MR. MAHAFFY: Mr. Chairman, I am afraid I will have to interject here. This property is owned by Gas & Oil Refineries Limited as explained in the submission. It was purchased on the

basis of an appraisal and paid for on that basis in 1943. Now, I would like to point out first of all that the change of ownership took place long before you, Mr. Chairman, started out on this investigation.

(Go to Page 6259)

MR.MAHAFFY: So that I would like to point out to my learned friend that that was not done with any idea of this thing coming along. Secondly, it was a sale and purchase made on the basis of an appraisal by a recognized appraisal concern. Our position, and we stand or fall on it, is simply this, we bought this equipment and we paid for it, and we do say that our cost is the basis on which we must proceed with this Hearing.

THE CHAIRMAN: On the other hand, if I want to explore every avenue that I think I am entitled to do, I could subpoena Mr. Scrimgeour?

MR. MAHAFFY: That is quite true, Sir.

THE CHAIRMAN: And ask him to produce the books or to inform himself. That he could do?

MR. MAHAFFY: That is a position, Sir, to which we will have to give consideration. But as I say the evidence is here and it is uncontradicted that the actual purchase was made. We can definitely establish that such was the case. It was not any arranged deal or anything like that.

THE CHAIRMAN: I know that, Mr. Mahaffy. Was it sold for cash or a sale where securities were transferred?

MR.MAHAFFY: I would not want to answer that question without refreshing myself. I do not know whether Mr. Scrimgeour can or not.

THE CHAIRMAN: Even I have some slight knowledge of it.

MR. MAHAFFY: Yes, I know you have. I do not know whether your memory is better than mine or not. I would hate to give statements and answer your question here when I am not sure. But as I say the position we take is simply this,

that this is what this stuff cost us and therefore that should be the basis on which to go from now on.

THE CHAIRMAN: Then, Mr. Mahaffy, if it can be shown that your people made an exceedingly bad bargain, are the people of Calgary who buy your gas to pay the consequence of your bad bargain?

MR. MAHAFFY: Well, Mr. Chairman, at least I have no reason to think that the General Appraisal Company Limited of Vancouver, who are well known in this type of work, I have heard nothing to make me think - and of course it is not what I think - that they have made a bad job of their work. We have submitted information from them and there is further information in the second report. Frankly, I am standing on their appraisal.

THE CHAIRMAN: I have had a witness stand in this box, Mr. Mahaffy, and tell me that he could do a job like that according to whether I was buying the property or selling the property, or required it for taxation purposes.

MR. MAHAFFY: Well, I hope that is not the kind of appraisal we had. But until there is some sugg4stion that it was not a proper appraisal, as I say I have to stand on it, Sir. I have no reason to think it was not a proper appraisal.

THE CHAIRMAN: On what basis didyou calculate depreciation, ten years?

A On the throughput basis, Mr. Chairman.

Q No, from 1934 until the time the appraisal wasmade ?

A That is the previous company Gas & Oil Products?

Yes?

A An annual charge?

Q How much?

A I think it was, talking again from memory, because I did not

refresh myself before I came here on these figures, I think Ireland took 15 or 20%.

Q MR. STEER: Annually?

A This change remember, sir, occurred in 1943. This is 1946, and I have not looked at those books since.

Q That is annually, the annual depreciation rate was 15 to 20%?

A Yes, for our own internal purposes, sir. We were not a public company and we were entitled to do whatever the Income Tax Department agreed with us on.

Q I do not know that I am very clear on what you propose under this scheme is to be paid to your Company by the public. It may be that the Gas Company and the City of Calgary are not very much interested. Am I right in this, that under this scheme which is contained in Exhibit 171, you do not propose that this Board shall fix any amount that is to be paid to your Company for the gathering of this gas that goes through your absorption plant?

A Quite correct, sir.

Q We are not interested in it and you do not claim that this Natural Gas Utilities Board shall fix any sum that is to be paid to your Company for its services with respect to any of the gas that passes through your absorption plant?

A That is correct, except indirectly. Indirectly we are hoping that the price shall be fixed to the major operator in the field and that we will then deliver it to them and obtain our return from what we sell to them.

Q So that you are content to have the Natural Gas Utilities Board fix those prices without regard to your Company at all?

A That is correct, sir. We maintain in our opening paragraph that our operations being so small our costs are out of all line with the other companies, and we could not expect to receive

or expect to have the consumers of the City of Calgary pay that figure. We are prepared to accept such rates as are established to the Madison Natural Gas Company and the others.

Q If you will look at Schedule "C" of your Exhibit 171 for a moment. Those figures in the right hand column give you the costs in any particular year per MCF of all the gas that passes through your absorption plant?

A Correct, sir.

Q Is that correct?

A Correct.

Q And that is based on this appraisal that was made in 1943?

A Correct.

Q And gives you a return of 9½% net?

A Yes.

Q That depreciation is based on throughput?

A Correct.

Q And if we were to take the book value of those assets and depreciate simply what was left of them, that figure in the right hand column would be very much less than what it is now.

A Except, sir, that I have to come back to this, that my submission is made for and on behalf only of Gas & Oil Refineries Limited.

Q Yes, but if you will assume with me that this statement was to be made up on the basis of book value of those assets, instead of on the appraised value, then that right hand figure would be much less than it is.

MR.MAHAFFY: Whose books are you referring to?

MR. STEER: I am referring to the books of the Gas & Oil Products Limited as perhaps Mr.Scrimgeour, well knows.

A Yes. Well, Mr. Chairman, may I say this, in making this submission

we had quite a discussion as to how it was to be done and the different methods, and we decided that the submission would be made by Gas & Oil Refineries Limited. Should the Board, however insist that the historical costs, that is what you are asking for?

Q That is right?

A Be submitted, and the Board so requested, I do not think there will be any objection on behalf of Mr. Mayland that these be submitted, and I will be pleased, or any of the other staff, to take the stand on behalf of Gas & Oil Products Limited. But today in reading this submission, I prefer not to discuss the Gas & Oil Products' figures because I am not, I have not revised my memory on it and I have not looked at them for five years, or four years at the least, and I am not in a position to answer the question.

Q THE CHAIRMAN: Let us see if you can answer some deductions though. You have here the appraised value. But we know that your plant was depreciated at the rate of 15% per annum, and, therefore, all the earlier installations must have been written off. From that we can readily deduce that your book value is very much less than your appraised value. Never mind about the consequences of that.

A Surely.

Q With that assumption then, Mr. Steer says if instead of using the appraised value as you have done in Schedule "C", if instead of that the actual book value had been used, there would be a vast difference in the result in the last column. That is obvious, is it not?

A Yes. The asset would be of no value at all. We would have no interest at all, no capital invested. All we would have would be a few dollars operating costs. That would apply to any

business, sir.

Q MR. STEER: This then seems to be the situation, Mr. Scrimgeour, that from the point of view of Gas & Oil Refineries Limited, this Board may proceed without any reference to these figures whatever?

MR.MAHAFFY: No, that is not right.

Q MR. STEER: Well, perhaps he will say?

A Would you repeat that?

Q Am I right in thinking that so far as Gas & Oil Refineries Limited are concerned, that this Board, the Natural Gas Utilities Board, may proceed with its task without reference to your figures because you are making no claim on it?

A That is correct.

THE CHAIRMAN: Mr. Harvie?

.....

CROSS-EXAMINATION BY MR. HARVIE.

Q Mr. Scrimgeour, in Schedule "A" in the third column under Rate, your Exhibit 171. We will take the one inch line, 12,600 feet at 0.31341, do you know whether that was the rate or value of the one inch pipe at the date of the valuation, the new value?

A Those figures, Mr. Harvie, were copied from the General Appraisal Company's volumes.

Q And values?

A And values, yes.

Q And you do not know just how they arrived at that figure?

A Not in my head, not without reading his exhaustive explanation at the commencement of the appraisal.

Q Possibly going down to the end of the statement, on the left

hand side, the second last column there is "less 30%". Can you explain that item?

A That is their depreciation charge. They took - if I could get the correct word - the present value.

Q THE CHAIRMAN: Reproduction cost new, is that it?

A Yes, reproduction cost less 30% was the basis on which that appraisal of the refinery was made.

Q Mr.HArvie: That being the case, I would assume that the price of 0.31341 for one inch pipe would be the new value of that pipe?

A Yes, that would be the new value at that date of this valuation, at least April 1st the value would be less 30%.

Q Now in the main body of your report, referring back to the same point made by Mr.Chambers, in regard to the 80-20 division of the absorption plant's products, the wet product and a similar division of 50-50 division of the dry gas, the income from the dry gas. Are you familiar with the contract of the British American Oil Company Limited?

A No sir, I am not. I think I have seen one but I have not read it through.

Q You do not know whether that is similar to their standard contract or not?

A I think we have one well which I believe is under contract to your Company and I think I am correct in saying that that is correct, sir, that your contract and my submission are almost identical.

Q But where you say in paragraph 10 "As an alternative suggestion we submit"or you suggest a split of 50-50 of the income from the sale of the dry gas, that was taken not from the practice adopted by the B.A. under its contract, but they are the uniform

practice as I understand it in other fields?

A Yes, we wrote the Natural Gas Association of America and obtained a sample of their contract, and examined it exhaustively, and felt that we should submit it to the Board as an alternative suggestion.

Q That is all, thank you.

.....

CROSS-EXAMINATION BY MR. STEER

Q Might I ask one question, just so that I may be clear in my own mind, Mr. Scrimgeour. Look at that Page 3, Paragraph 10, the last three lines. "Whereby the revenue for sale of dry gas residue is divided on a 50-50 basis between absorption plant and well operator in the ratio that his dry gas content in the wet gas delivered bears to the total." "The dry gas content in the wet gas delivered," is that what it means?

A Perhaps I did not word this paragraph very well, sir.

Q That is what I understand it to mean. Will you just note those words? "The total dry gas content in the wet gas delivered," and see if that is what it means?

MR.HARVIE: Would you refer me to the place?

MR. STEER: The last paragraph of paragraph 10 on page 3.

MR.HARVIE: The delivery bears to the total what?

MR.STEER: "The dry gas content in the wet gas delivered."

A My intention, sir, was this, that the ratio of the dry gas to the wet gas would give us his share in the market. As you know each well has a variable quantity of dry gas in it, according to its G.P.M. test. Therefore, each well has to be taken on its own merits. I cannot say that I have a total

revenue to divide between 10 wells that each gets one-tenth, nor can I say that each well delivering so many cubic feet of wet gas that one man has 10% of the total and he, therefore, gets 10% of the revenue. I have got to find out the ratio of dry gas in his wet gas content. Then when I have that that ratio gives me the percentage of the total. I think Mr.Earl Smith knows exactly what I am getting at.

THE CHAIRMAN: Can you illustrate it by a figure, Mr. Scrimgeour?

MR.HAMILTON: If Mr. Scrimgeour could tell us the difference between suggestions 1 and 2, whether the actual ratio on basis 2 is the same as on basis 1 except substituting 50-50 for 80-20?

A Yes, exactly.

Q Just the same?

A Just exactly, no difference.

.....

CROSS-EXAMINATION BY MR. CHAMBERS.

Q A question arose out of a discussion that Mr.Steer had and I would like to bring it up now because my friend, Mr. McDonald, is probably more interested than anybody in it, and that was the statement that Mr.Scrimgeour made in reply to my friend, Mr. Steer, that so far as the Board was concerned, Gas & Oil Refineries was not asking the Board to make any change or price on the basis of this exhibit. Now, I was wondering whether Mr. Scrimgeour had this in mind, and if he did not I suggest it would be for the benefit of all of us if he gave some thought to it, that there is going to be, or the Board has power to fix the well head price, Mr. Scrimgeour?

Assuming that the Board decides that it should fix the well head price for wells including wells in your area that would not dovetail in to your 50-50 basis, or your 80-20? Now assuming there was a situation such as that, what I want to make clear is whether you are relying on those statements as to what the consequences might be.

THE CHAIRMAN: Well we will give him until 9.30 tomorrow morning to figure that out.

(At this stage the Hearing was adjourned until 9.30 a.m. April 17th, 1946).